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Description

The present invention relates to a trailer hitch device for motor vehicles which serves to draw a trailer or the like.

Regarding such a trailer hitch device for motor vehicles, there has heretofore been known one shown in Figs. 10 to 12.

This device is of a structure which is fixed under the floor of a vehicle body near a rear bumper. It comprises a beam member 3 which is supported by the vehicle body floor 2 through brackets 1 fixed to both the ends thereof, and a trailer hitch 4 whose base end is fixed to the middle part of the beam member 3 and which is provided at its distal end with a coupling ball 4a protruding rearwards from under the rear bumper 5. An example which is fixed under the floor through the brackets in this manner, is also stated in the official gazette of Japanese Utility Model Registration Application Laid-open No. 114704/1980.

With the prior-art example, the trailer hitch device is generally exposed under the floor at the rear part of the vehicle body. Therefore, the example has the problems that the external appearance of the rear part of the motor vehicle is spoiled, and that the departure angle of the vehicle body is sacrificed.

Moreover, the fixation of the trailer hitch device to the vehicle body floor is prone to become disadvantageous in strength and requires stiffening of the vehicle body floor.

Also, FR-A-2569623 and DE-A-2339637 each disclose a trailer hitch device in which a trailer hitch is housed within a rear bumper face covering the rear bumper. In order to attach a trailer to the trailer hitch it is necessary to open an aperture in the rear bumper face in order to expose the trailer hitch to enable the coupling component of the trailer to be attached thereto.

It is an object of the present invention to provide a trailer hitch device with which the external appearance of the rear part of a motor vehicle is favourable, with which the departure angle of a vehicle body is sufficiently secured and which is advantageous in strength.

In accordance with the present invention, there is provided a rear bumper connected to a body floor of the vehicle via right and left bumper stays, comprising a rear bumper face covering said rear bumper; a beam member supported by the stays; and a trailer hitch member on the beam member; characterised by a coupling ball of the trailer hitch protruding rearwards to the exterior of the rear bumper face.

The present invention also provides a trailer hitch device for a motor vehicle, a beam member whose ends are respectively fixed to right and left rear bumper stays of a rear bumper of the motor vehicle and which is covered with a rear bumper face of the rear bumper, and a trailer hitch which is fixed to said beam member and whose coupling ball portion at its distal end protrudes rearwards of a vehicle body of the vehicle through an opening provided in the bumper face.

According to such an expedient, the beam member which is a mounting member for the trailer hitch is covered with the rear bumper face, so that the external appearance of the rear part of the motor vehicle becomes favourable.

Also, the beam member is located at a position which is covered with the rear bumper face, so that the departure angle of the vehicle body is sufficiently secured.

Further, the beam member is fixed to the rear bumper stays, so that the expedient is more advantageous in strength as compared with the fixation to the vehicle body floor.

By way of example only, specific embodiments of the present invention will now be described, with reference to the accompanying drawings, in which:-

Fig. 1 is an exploded perspective view showing the general construction of an embodiment of trailer hitch device in accordance with a first aspect of the present invention;

Fig. 2 is a perspective view of the essential portions of the embodiment of Fig. 1;

Fig. 3 is an exploded perspective view of the essential portions of the embodiment of Fig. 1;

Fig. 4 is a sectional view taken along line IV-IV in Fig. 1;

Fig. 5 is a sectional view taken along line V-V in Fig. 1;

Fig. 6 is a partial perspective view showing the external appearance of the rear part of a motor vehicle to which the embodiment of Fig. 1 is applied;

Fig. 7 is a perspective view of the essential portions of an embodiment of trailer hitch device in accordance with a second aspect of the present invention;

Fig. 8 is a sectional view of the embodiment of Fig. 7 corresponding to the view of Fig. 4 in the first embodiment;

Fig. 9 is a sectional view of the embodiment of Fig. 7, corresponding to the view of Fig. 5 in the first embodiment;

Fig. 10 is a perspective view of a part under the floor of a motor vehicle showing a prior-art example;

Fig. 11 is a perspective view showing the general construction of the prior-art example of Fig. 10; and

Fig. 12 is a perspective view of the rear part of the motor vehicle showing the prior-art example of Fig. 10.

An embodiment of the present invention will be concretely described with reference to the accompa-
Referring to Fig. 1, numeral 6 designates a beam member which is formed of a square pipe, and the base end of a trailer hitch 7 which has a coupling ball 7a at its distal end is fixed to the middle part of the beam member 6 in the longitudinal direction thereof. In addition, numerals 8, 8 indicate a pair of right and left rear bumper stays to which both the ends of the beam member 6 are respectively fixed, and which support an upper bumper beam 10 and a lower bumper beam 11 through brackets 9, 9, so as to extend them laterally.

The upper bumper beam 10 and the lower bumper beam 11 are connected through connecting members 12, 12 so as to lie one over the other, and a rear bumper face 13 which is mounted with these beams as supporting members is provided with an opening 2) in which a binding bracket 16 by bolts. In addition, the corresponding end of the upper bumper beam 10 is fixed to a vehicle body floor 15, and the fore end part of which is bent upwards, which serve to weld and fix the upper mounting pieces 9b, which serve to weld and fix to the rear bumper stay 19b by screws. Since the body of the motor vehicle, and a second element 19b located below, which is combined with the first element 19a. As shown in Fig. 7, mounting pieces 19c bent upwards, which serve to weld and fix the upper part of the bumper beam 18, are formed at the rear end part of the first element 19a, while mounting pieces 19d bent downwards, which serve to weld and fix the lower part of the bumper beam 18, are formed part thereof to the third element 8e and the mounting surface 8a of the first element 8c, and the lower part thereof to the third element 8e and the second element 8d.

Besides, as shown in Fig. 5, the trailer hitch 7 is connected to the beam member 6 by bolts in the state in which a groove 7b formed at the base end part of this trailer hitch is held in snug engagement with the beam member 6, and it has the coupling ball 7a at its distal end protruded rearward of the rear bumper face 13 through the boot 14.

With the trailer hitch device of the above construction, only the portion of the coupling ball 7a of the trailer hitch 7 protrudes beyond the rear bumper face 13, and the beam member 6 which is the mounting member of the trailer hitch 7 is completely covered with the rear bumper face 13, so that the external appearance of the rear part of the motor vehicle is favourable as illustrated in Fig. 6.

Furthermore, the beam member 6 is located at the position which is covered with the rear bumper face 13, so that the departure angle of the vehicle body is not affected at all, and the embodiment can secure a sufficient departure angle in contrast to the prior-art example.

Further, the beam member 6 is fixed to the firm rear bumper stays 8, so that the embodiment is more advantageous in strength than in the case of the fixation to the vehicle body floor 15.

In addition, since this embodiment utilizes the existing rear bumper stays 8 as the supporting members of the beam member 6, it is smaller in the number of components, lighter in weight and lower in cost than the prior art. Moreover, since the beam member 6 is structurally bolted to the rear bumper stays 8, it is easy to attach and detach.

Figs. 7 to 9 show another embodiment of the present invention which is applied to a motor vehicle having a thin type rear bumper face 17.

In this case, a mounting member for the rear bumper face 17 is a single bumper beam 18 which has a U-shaped vertical section, and which is directly fixed to rear bumper stays 19 by screws. Since the other construction of this embodiment is substantially the same as in the foregoing embodiment, it shall be omitted from description by employing identical symbols to describe the same features.

In this embodiment, the rear bumper stay 19 is configured of a first element 19a located above, which has a surface to be mounted on the vehicle body of the motor vehicle, and a second element 19b located below, which is combined with the first element 19a. As shown in Fig. 7, mounting pieces 19c bent upwards, which serve to weld and fix the upper part of the bumper beam 18, are formed at the rear end part of the first element 19a, while mounting pieces 19d bent downwards, which serve to weld and fix the lower part of the bumper beam 18, are formed
at the rear end part of the second element 19b.

Also with this embodiment, only the portion of the coupling ball 7a of a trailer hitch 7 protrudes beyond the rear bumper face 17, and a beam member 6 which is the mounting member of the trailer hitch 7 is completely covered with the rear bumper face 17 in built-in fashion, so that functional effects similar to those of the foregoing embodiment are attained.

As described above, according to the present invention, a beam member which is a mounting member for a trailer hitch is covered with a rear bumper face, so that the external appearance of the rear part of a motor vehicle can be made favourable.

Furthermore, the beam member is located at a position which is covered with the rear bumper face, so that the departure angle of the vehicle body can be sufficiently secured.

Further, the beam member is fixed to rear bumper stays, so that the invention is more advantageous in strength as compared with the technique in which the beam member is fixed to a vehicle body floor.

Claims

1. A trailer hitch device for a motor vehicle having a rear bumper (10, 11; 18) connected to a body floor (15) of the vehicle via right and left bumper stays (8; 19), comprising a rear bumper face (13; 17) covering said rear bumper; a beam member (6) supported by the stays (8; 19); and a trailer hitch mounted on the beam member; characterised by a coupling ball (7a) of the trailer hitch protruding rearwardly to the exterior of the rear bumper face (13; 17).

2. A trailer hitch device as claimed in claim 1, wherein said rear bumper comprises an upper bumper beam (10) and a lower bumper beam (11), and said rear bumper face (13) is supported by said upper and lower bumper beams.

3. A trailer hitch device as claimed in claim 1, wherein the rear bumper comprises a generally U-shaped beam (18), and the rear bumper face (17) is supported by the U-shaped beam (18).

4. A trailer hitch device as claimed in any of the preceding claims, wherein the trailer hitch (7) is mounted at the centre of the beam member (6).

5. A trailer hitch as claimed in any of the preceding claims, in which the trailer hitch (7) is releasably mounted on the beam member.

6. A trailer hitch as claimed in any of the preceding claims, wherein the beam member (6) is supported by the stays (8; 19) between the body floor and the rear bumper (10, 11; 18).

Patentansprüche

1. Anhängerkupplungsvorrichtung für ein Kraftfahrzeug, das einen Heckstoßfänger (10, 11; 18) aufweist, der über eine rechte und eine linke Stoßfängerstrebefrom (8; 19) an einem Karosserieboden (15) des Fahrzeugs befestigt ist, mit einer Heckstoßfängerverkleidung (13; 17), die den Heckstoßfänger abdeckt, einem von den Streben (8; 19) gehaltenen Trägerelement (6) und einer an dem Trägerelement befestigten Anhängerkupplung, gekennzeichnet durch eine Kupplungskugel (7a) der Anhängerkupplung, die zu der Außenseite der Heckstoßfängerverkleidung (13; 17) nach hinten vorsteht.

2. Anhängerkupplungsvorrichtung nach Anspruch 1, bei der der Heckstoßfänger einen oberen Stoßfängerträger (10) und einen unteren Stoßfängerträger (11) aufweist und die Heckstoßfängerverkleidung (13) durch den oberen und den unteren Stoßfängerträger gehalten wird.

3. Anhängerkupplungsvorrichtung nach Anspruch 1, bei der der hintere Stoßfänger einen insgesamt U-förmigen Träger (18) aufweist und die Heckstoßfängerverkleidung (17) von dem U-förmigen Träger (18) gehalten ist.

4. Anhängerkupplungsvorrichtung nach einem der vorhergehenden Ansprüche, bei der die Anhängerkupplung (7) in der Mitte des Trägerelementes (6) angebracht ist.

5. Anhängerkupplung nach einem der vorhergehenden Ansprüche, bei der die Anhängerkupplung (7) lösbare an dem Trägerelement befestigt ist.

6. Anhängerkupplung nach einem der vorhergehenden Ansprüche, bei der das Trägerelement (6) zwischen dem Karosserieboden und dem Heckstoßfänger (10, 11; 18) durch die Streben (8; 19) gehalten wird.

Revidongations

1. Dispositif d'attelage de remorque pour un véhicule à moteur ayant un pare-chocs arrière (10, 11; 18) relié à un plancher de châssis (15) du véhicule par des ancrages de pare-chocs droit et gauche (8; 19), comprenant un enjoliveur de pare-chocs arrière (13; 17) qui recouvre ledit pare-chocs arrière; une poutrelle (6) supportée par les
ancrages (8;19) ; et un attelage de remorque monté sur la poutrelle ; caractérisé en ce qu'une rotule de couplage (7a) de l'attelage de remorque fait saillie vers l'arrière à l'extérieur de l'enjoliveur de pare-chocs arrière (13;17).

2. Dispositif d'attelage de remorque suivant la revendication 1, dans lequel ledit pare-chocs arrière comprend une poutrelle de pare-chocs supérieure (10) et une poutrelle de pare-chocs inférieure (11), et ledit enjoliveur de pare-chocs arrière (13) est supporté par lesdites poutrelles de pare-chocs supérieure et inférieure.

3. Dispositif d'attelage de remorque suivant la revendication 1, dans lequel le pare-chocs arrière comprend une poutrelle (18) sensiblement en forme de U, et l'enjoliveur de pare-chocs arrière (17) est supporté par la poutrelle en U (18).

4. Dispositif d'attelage de remorque suivant une quelconque des revendications précédentes, dans lequel l'attelage de remorque (7) est fixé au centre de la poutrelle (6).

5. Attelage de remorque suivant une quelconque des revendications précédentes, dans lequel l'attelage de remorque (7) est fixé de façon démontable à la poutrelle.

6. Attelage de remorque suivant une quelconque des revendications précédentes, dans lequel la poutrelle (6) est supportée par les ancrages (8;19) entre le plancher de châssis et le pare-chocs arrière (10,11;18).